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STATISTICAL BULLETIN

METROPOLITAN LIFE INSURANCE COMPANY

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If Our Mortality Rates Were Like New Zealand's

A NEWBORN child in New Zealand can look forward, on an average, to 5½ more years of life than a child just born in the United States. How does New Zealand make this remarkable record, and where do we fall behind? What would it mean to us if we could do as well as the New Zealanders?

The crude death rate in our white population is 10.4 per thousand. If we could *at one stroke* improve our mortality at each age of life to meet the New Zealand standard our death rate would suddenly drop to 8.2, and in a single year about 250,000 deaths, or nearly one fifth of the total deaths recorded at the current rate, would be prevented in our white population alone. These figures and all others cited are based on the two-year period 1933–1934.

The difference, when thus presented, is so striking that inevitably one asks what causes of death are mainly responsible for this excess of mortality in the United States over that in New Zealand.

The greatest saving, in point of numbers—well over 50,000 deaths in a single year—would occur in deaths from influenza and pneumonia. Next would come chronic nephritis, with a saving of over 46,000; cerebral hemorrhage, about 39,000; and accidents, more than 37,000. This would conclude the list of the most outstanding gains. But very material reduction would still occur in the toll from several other important causes, namely about 18,000 from heart disease, more than 13,000 from diarrhea and enteritis, over 7,000 from appendicitis, more than 7,000 from diabetes, and about 6,500 from tuberculosis.

Some of the lives would be saved at very early ages. Thus infant deaths would be diminished by nearly 39,000 (much of this saving being from deaths by diarrhea and enteritis). Of mothers who are now sacrificed to the perils of childbirth, about 3,000 would be saved in a single year.

In a few instances our mortality rates, though less favorable at earlier ages than those of New Zealand, are more favorable at more advanced ages. This is the case for heart disease, for example. From about age 75 up, our death rate from this cause is less than the New Zealand rate, though at earlier ages our rate is very materially higher. This might be expressed by saying that

the persons who die of heart disease do so as a general rule at an earlier age here than in New Zealand, with the result that at later ages there are fewer of this type of persons left over to die.

There is one very important cause of death for which our death rates present a slight advantage over those of New Zealand, namely, cancer. If the substitution of the New Zealand rates for ours were carried out for this disease also, we would actually have about 1,900 additional deaths in one year. This is mainly on account of deaths at ages over 65. Below this age New Zealand has the advantage.

One note of caution must be sounded as to the interpretation of these figures. As expressly noted, they are based on the supposition that the New Zealand death rates became established among us *suddenly, at one stroke.* Actually we may hope to attain them in a *reasonable* lapse of time. While the gradual improvement was thus going on, there would be another gradual change taking place concurrently—a general aging of the population, a shift toward a greater proportion of older persons among us, as the effect of the declining birth rate in the past, and the presumable continuation of this decline in the future. The shift in our age composition tends to *increase* our general death rate, because mortality is high at advanced ages. Therefore, unless our approach to the New Zealand standard is accomplished in a very short time, the influence of the aging of the population will mask the effect of improved mortality, so far as this becomes apparent in the general or total death rate. We shall, in fact, be doing well if, in the face of the shift in our age composition, we manage to keep the general death rate from actually increasing. Sooner or later we must in any case look for an increase, for our present death rate of about 10 per thousand would mean, in a stationary population, an average length of life of 100 years. This we cannot hope to achieve so long as the physical nature of man remains essentially what it is today and has been in all historic time.

Deaths from Lightning

THE danger of being killed by lightning in the United States is very slight. About three persons in every million of the population have been thus struck down annually in the last 10 years. During the period 1924–1933 there were recorded 3,849 deaths within the expanding Death Registration Area of the United States, or the equivalent of 385 per annum. While the resulting general mortality for the country as a whole is small, there are areas, such as New Mexico, Arizona, Georgia, and Mississippi, where each year about 10 persons in a million lose their lives through this cause.

The frequency of thunderstorms is determined by climatic factors,

although the lightning hazard varies with the conditions of exposure. In a city like New York, with many tall buildings built on a solidly connected steel skeleton, almost complete protection from death by lightning is afforded not only to the persons within such buildings, but also to those in the vicinity. These tall buildings act as most efficient lightning conductors, partly by dissipating the electric tension without any actual lightning discharge, and partly by receiving the lightning discharge when it does occur, and passing it harmlessly to the ground. It is a matter of relatively common occurrence in thunderstorms for these tall buildings to be struck without the slightest damage to the buildings or their occupants.

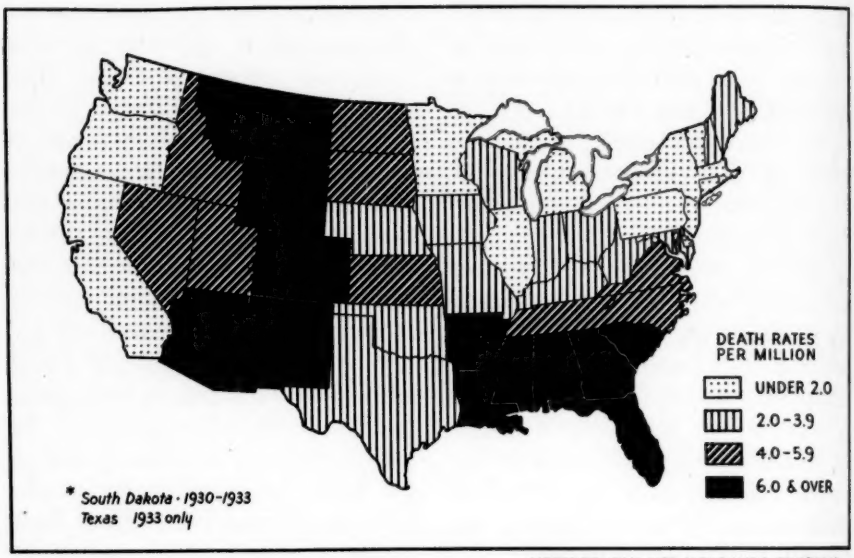
The shading on the map on page 4, which indicates the relative frequency of deaths by lightning, is thus the resultant of the frequency of thunderstorms in the respective areas and the conditions of life of the inhabitants. Those who are forced to spend some of their working hours in the fields may sometimes be unable to avoid exposure in a place where they form an outstanding target for the electric discharge. On the whole, city dwellers are probably safer than the traveler on the open road, the worker in the field, or the rider on the plains.

While these secondary factors undoubtedly do enter, the map shows clearly that, on the whole, climatic conditions are the main determinant. There is a continuous band of States, including Montana, Wyoming, Colorado, New Mexico, and Arizona, running from north to south, characterized by annual death rates of six per million and over; another continuous patch of States with these high rates is found in the southeast corner of the United States, including South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Arkansas. States bordering on these areas also had in most cases higher than average death rates from this cause.

In contrast, the Pacific Coast States and the highly industrialized States of New England and the Middle Atlantic Division ranked as the least hazardous parts of the country as regards fatalities from lightning. Outstanding among the States with low rates may be mentioned California, with a population of approximately six million, where there have been only five deaths from lightning in a 10-year period studied, and the State of Washington with a population of approximately a million and a half and only eight deaths in the same period.

The death rates for lightning, by geographical division, for the five years 1929–1933 ranged from a high of 8.3 per million to a low of 2 in ten million. The Mountain States recorded the former rate and the Pacific Coast States the latter. The East South Central States ranked next to the Mountain States with a death rate of 7.1 per million; the South Atlantic section followed with 6.0, while the rate for the West South Central section was 5.6. In

GEOGRAPHIC DISTRIBUTION OF DEATH RATES FROM LIGHTNING IN THE UNITED STATES, 1929-1933 *



METROPOLITAN LIFE INSURANCE COMPANY

the North, the West Central States reported a rate of 3.4 per million, while the East Central Division recorded a rate of 2.1 per million. The two remaining sections, New England and the Middle Atlantic, had identical rates of 1.3 per million.

In the region of the highest rates, three States, namely, New Mexico, Arizona, and Colorado, had average death rates from lightning of more than eight per million. In the South, the four States with the highest rates—Georgia, Florida, Alabama, and Mississippi—also had mortality of more than eight per million from lightning.

Are deaths from lightning stroke to be classed as preventable? Certainly the risk can be much reduced by the exercise of common sense. Since almost any upright object projecting from the ground is a better conductor of electricity than air, the tallest object in a landscape tends to be the natural target for the lightning stroke. Isolated buildings, trees, or even single individuals on a plain or on a rising piece of ground, may serve as conductors for the discharge. In a storm, therefore, it is an obvious precaution to avoid being near or forming part of such a target. Beyond that, there is little cause for worry, since the chance of being struck in the course of the year is measured by a few units in a million.

The Increasing Chances of Widowhood

THE chances of a wife becoming widowed are actually greater today than they were 10 years ago, even though the average length of life has steadily increased. This is because the improvement in mortality has been greater for women than for men. So, for example, for a couple of equal ages, the chances that the wife will eventually be left a widow are about 55 in 100, according to the mortality in the United States in 1929–1931, or about the time of the last census; against this, the corresponding chances, according to the mortality of 10 years prior, were about 52 in 100.

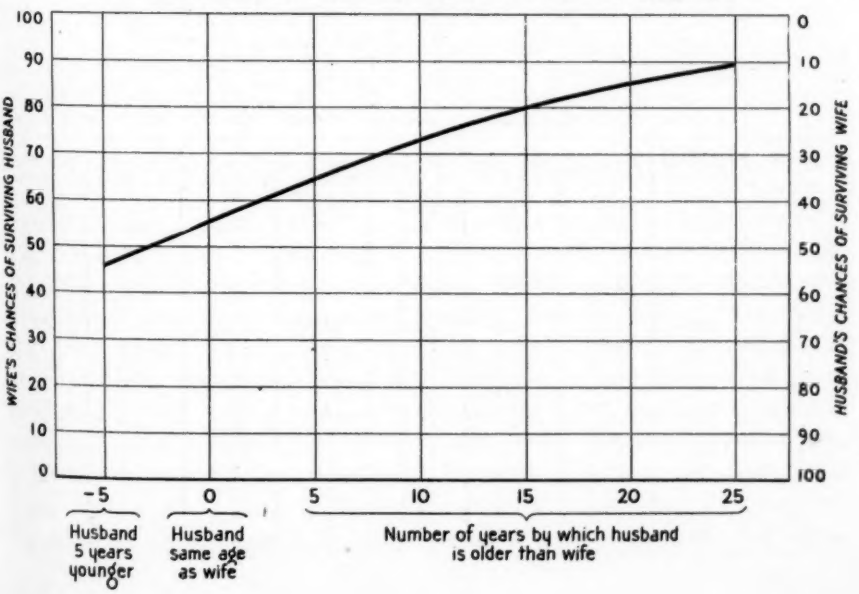
For husbands the opposite is true; their chances of becoming widowed have diminished in the past 10 years. This must necessarily be so, because the probability of the husband becoming widowed is the complement of the probability of the wife becoming widowed, since the death of one or the other must take place first, except in those rare instances where husband and wife are killed practically simultaneously in an accident. Considering again the case of the couple of equal ages, the chances of the husband becoming widowed, as computed according to 1929–1931 mortality, were about 45 in 100; according to the mortality of 1920, they were about 48.

These facts, together with further details, are exhibited graphically in the diagram below.

Having thus obtained estimates

CHANCES IN ONE HUNDRED THAT A MARRIED PERSON WILL SURVIVE HIS OR HER MATE

BASED ON MORTALITY EXPERIENCE, UNITED STATES, 1929-1931



of the probabilities of husband or wife becoming widowed, we may go a step further and inquire how long in each case the surviving partner will outlive the one who is removed by death. As a matter of fact, computation shows that the average duration of widowhood is longer for women than for men. This is because the wife is usually younger than the husband, and the mortality of women is also less than that of men. The table below exhibits the result of the computations of the average duration of widowhood for various ages of the wife and various age differences for the couple. From this table we see, for example, that if husband and wife are the same age, say 35 years old, the average duration of widowhood in the case that the husband dies first is 15.9 years. If the wife dies first the husband will, on an average, survive as a widower for 14.3 years. If, on the other hand, the wife is 35 and the husband 10 years older—that is, 45 years old—then if the husband dies first the wife will, on an average, be a widow for 18.6 years; if the wife dies first the husband will be a widower, on an average, for 11.7 years.

All the figures cited have been computed on the supposition that the surviving partner does not remarry. Allowance for remarriage would naturally reduce somewhat the estimated duration of widowhood. Also, the computations have been based on mortality tables relating to the white population as a whole. The mortality of married and widowed persons differs somewhat from the general mortality, but we have no means of making accurate allowance for this.

Average Duration of Widowhood for Specified Ages of Married Couples (a) If Wife Survives Husband (b) If Husband Survives Wife Based on Mortality in the United States, 1929–1931

Present Age of Wife	(a) Average Number of Years by Which Widow Will Survive Husband				(b) Average Number of Years by Which Widower Will Survive Wife			
	Husband 5 Years Younger Than Wife	Husband Same Age as Wife	Husband 5 Years Older Than Wife	Husband 10 Years Older Than Wife	Husband 5 Years Younger Than Wife	Husband Same Age as Wife	Husband 5 Years Older Than Wife	Husband 10 Years Older Than Wife
15	....	....	20.4	22.1	....	....	16.7	15.9
20	....	18.5	19.6	21.3	....	17.1	16.0	15.0
25	16.9	17.6	18.8	20.5	17.8	16.2	14.9	13.9
30	16.0	16.8	18.0	19.6	16.9	15.3	13.9	12.8
35	15.1	15.9	17.1	18.6	16.1	14.3	12.9	11.7
40	14.1	15.0	16.1	17.5	15.2	13.4	11.9	10.7
45	13.1	13.9	15.0	16.3	14.3	12.5	10.9	9.6
50	12.1	12.8	13.7	14.9	13.3	11.5	9.9	8.5
55	10.9	11.5	12.3	13.3	12.3	10.4	8.8	7.3
60	9.6	10.2	10.8	11.6	11.1	9.2	7.6	6.3
65	8.3	8.8	9.3	9.8	9.8	8.0	6.5	5.2
70	7.0	7.3	7.7	8.1	8.5	6.8	5.3	4.2

Prevent Vacation Drownings

It is unfortunate that very little success has been achieved in reducing the toll from accidental drownings in the United States. The death rate, in fact, was almost as high in 1934 (the latest year for which figures for the entire country are available) as it was 10 years earlier.

Accidental drownings accounted for 7,326 deaths throughout the country in 1934. Most of these fatalities were preventable, and the great majority of those that are sure to occur during the current summer could likewise be prevented.

Two characteristics of drowning accidents are especially important. First, nearly 90 percent are those of men and boys, and nearly one half of all the water fatalities among them occur between the ages of 5 and 25 years. This shows that the most fertile field for the saving of lives from this form of accident is among school boys and young men. Second, three fourths of the deaths occur during the five-month period, May to September—that is, during the vacation season when swimming and other water sports are at their height. Less than one tenth occur in the pursuit of regular gainful occupations, and accidental drownings of this type are probably the least preventable.

It is clear that we must develop a wider application of the principles and practice of water safety. The American Red Cross has done splendid work by way of instruction in swimming and in methods of rescue and resuscitation. The effectiveness of supervised swimming, as practiced in hundreds of summer camps, has been conclusively demonstrated, for it is rare indeed that a life is lost at one of these camps. Repeated warnings in the columns of the press, over the radio, and on posters would help greatly. Now, at the opening of the season of water sports, is the opportune moment to stress the importance of these measures.

Prevention of Deaths from Diabetic Coma

The diabetes death rate is unnecessarily high. This is due, in great part, to the large number of deaths from diabetic coma which still occur today, although diabetic coma is a preventable and curable condition. It chiefly affects neglected or badly treated cases, or those in which diabetes escapes diagnosis until coma sets in. Insulin has made deaths from diabetic coma almost as inexcusable as deaths from diphtheria have become since the introduction of toxin-antitoxin and toxoid immunization. Yet, only last year 18 percent of the deaths of diabetic policyholders of the Metropolitan Life Insurance Company were due to primary diabetic coma. This finding is the result of a recently completed survey, based on detailed reports by physicians in 3,519 cases.

The mortality from coma among the diabetics in this experience, which is representative of the diabetic population in cities and towns, is nearly three times as high as the current figures in good clinical practice. Specialists in diabetes are agreed that practically all of the deaths from coma among their patients are preventable. More energetic efforts, therefore, are called for, to avoid this most serious complication of diabetes, and to treat it properly when it occurs.

Certain characteristics of the patients dying in coma, and certain features of their medical history, point the way to the control of the situation. First of all, the incidence of diabetic coma varies considerably with the age of the patient. Children are especially susceptible. No less than 70 percent of the 97 diabetic children in this study succumbed to primary diabetic coma. This is more than four times the proportion occurring at the older ages. Every diabetic child must be considered a potential coma case. Diabetes in childhood is generally severe and the child, therefore, requires constant supervision and regular insulin treatment. Yet, we find that only half the children in this group, whose diabetes was diagnosed before final illness, had received insulin regularly.

In emphasizing the urgency of constant vigilance against coma in children, we must not, however, lose sight of the fact that there were in this experience eight times as many coma deaths among older persons, who are the more frequent sufferers from diabetes. There is thus a fertile field for attack on coma in the ranks of the adult diabetic population. Over 16 percent of the deaths at ages 20 and over were due to coma. Again, we find that here, where the great majority of the patients need insulin regularly, only 28 percent actually were reported so to use it.

Another vital point is that the incidence of coma deaths among regular users of insulin was one third lower than in the entire group studied. As to the reason for failing to use the treatment, analysis shows that, of those dying in diabetic coma who never used insulin during their illness, 76 percent omitted it because of a personal objection on the part of the patient or a member of the family. The same reason was also frequently given for those who had used insulin but later discontinued it. It is interesting to note that a large number in both groups did finally get insulin in a belated effort to save their lives. The value of the regular use of insulin, where it is indicated, has been indisputably proved in clinical experience and needs no renewed emphasis here. These findings, however, serve well to show that the lessons of clinical experience are yet to be learned by large numbers of patients and their physicians.

Many coma cases in this study occurred among those who, until their final illness, were not known to be diabetic. The proportion of coma deaths among them was twice

that among patients with earlier diagnoses. This points clearly to two important facts. The first is the great value of early diagnosis of diabetes. This is proved by the experience of Dr. ELLIOTT P. JOSLIN, the eminent authority on diabetes, in which the mortality in a group of men, whose diabetes was discovered through life insurance examination, was 38 percent lower than that among other male diabetics. Consequently, periodic medical examination, including an urinalysis, especially of overweight persons with a family history of diabetes, would greatly help to make early diagnosis more common. This, in turn, makes for early treatment, and postpones or altogether aborts the development of complications.

The second important point is the necessity for care in distinguishing diabetic coma from coma due to other causes. Numerous instances are on record of fatalities resulting from errors of this kind. It is vital that physicians, particularly those in charge of the emergency admissions to hospitals, be alert in this regard. Known diabetics are protected against this danger if they always carry a card of identification showing that they are diabetic.

Insulin is an integral part of the treatment of diabetic coma and every patient in coma should get it. Actually, one fourth of the primary coma patients in this group died in coma without this treatment. Undoubtedly, insulin would have saved many of these lives.

The great necessity in the diabetes situation today is the application of the most modern methods of treatment of the disease, especially with regard to the use of insulin. There lies the hope of abolishing diabetic coma and of greatly increasing the health and longevity of the diabetic. In no other disease is there greater need for careful instruction of the patient and close cooperation between physician and patient. Especially is this true of children, who are prone to diabetic coma. They and their parents should learn as much as possible, without delay, about diabetes and its management. The physician should make every effort to see that the diabetic who needs insulin uses it, for diabetic coma is a distinct hazard in such cases. Above all, every patient in coma should get insulin as part of the treatment of this condition. Strict adherence to these rules promises a further curb on the mortality from diabetic coma, which is so deplorable today.

Health Record for May 1936

THE death rate in May among the Industrial policyholders of the Metropolitan Life Insurance Company (8.8 per 1,000) was a little below that for the corresponding month of last year. The favorable record for the month has had the effect of reducing the cumulative mortality rate for the first five months of 1936 to less than ½ of 1

percent above that for the like period of last year. Inasmuch as the year 1935 set a new low mortality record for these 17,000,000 insured wage-earners and their dependents, it is obvious that highly satisfactory health conditions are prevailing this year among the industrial populations of the United States and Canada.

This is true, in particular, of the latter country, where the cumulative death rate up to the end of May has registered a decline of 3.3 percent, as compared with last year.

The developments of the current year with respect to the important causes of death have been remarkably clear cut, and for the most part, favorable. Each of the four principal communicable diseases of childhood is causing fewer deaths than in 1935; the year-to-date death rate for tuberculosis shows a drop of 6.7 percent, and it is already assured that 1936 will continue the long-time downward swing of the mortality from this disease. The cancer rate shows a most gratifying drop, namely, 4.0 percent. There have been fewer suicides, homicides, and fatal accidents than during the first five months of 1935, and the year-to-date death rate for automobile accidents has declined nearly 14 percent, as compared with the first five months of last year.

Perhaps the most noteworthy among the favorable developments of the current year, however, has been a drop in the death rate for diseases of pregnancy and childbirth, from 9.3 per 100,000 in 1935 to 7.8 in 1936—a decrease of more than 16 percent.

Had it not been for a considerable rise in the mortality from pneumonia, the cumulative death rate for all causes combined thus far in 1936 would have been even lower than in the like part of last year.

The death rate in the general population of the large cities of the United States during the month of May was 11.8 per 100,000 estimated population, as compared with 13.0 in April, and 11.7 in May 1935. Comparison with the preceding month shows that there was increased prevalence in May of measles, poliomyelitis, smallpox, and typhoid fever, along with fewer cases of diphtheria, influenza, and scarlet fever. As compared with May 1935, there was more sickness this year from influenza and smallpox but lower prevalence of diphtheria, measles, poliomyelitis, scarlet fever, and typhoid fever.

Items of special public health interest, recently reported, are: At the THIRD PAN-AMERICAN CONFERENCE OF NATIONAL DIRECTORS OF HEALTH, held in Washington in April, the extension of free maternity centers was recommended as a means of protecting maternal and infant health. It was also urged that the accurate reporting of communicable diseases be a subject of careful and constant consideration by public health officers throughout the world, as a fundamental requirement for successful health work.

The following table shows the mortality among Industrial policyholders for May 1936, April 1936, and May 1935, together with the cumulative rates for the first five months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rates per 100,000 for Principal Causes. Weekly Premium-Paying Business in Industrial Department. All Ages (Annual Basis).*

MONTHS OF MAY 1936, APRIL 1936, AND MAY 1935.

CAUSES OF DEATH	ANNUAL RATE PER 100,000 LIVES EXPOSED*				
	May 1936	April 1936	May 1935	Cumulative January-May 1936	Cumulative January-May 1935
TOTAL—ALL CAUSES	881.7	924.7	887.4	926.4	922.0
Typhoid fever	.4	.9	.6	.5	.5
Measles	1.6	1.8	5.8	1.5	3.8
Scarlet fever	2.8	3.9	4.4	3.1	3.8
Whooping cough	1.1	2.2	3.6	1.6	3.3
Diphtheria	1.2	1.7	1.3	2.0	2.1
Influenza	19.3	25.5	12.6	24.5	25.4
Tuberculosis (all forms)	53.3	59.7	59.1	55.8	59.8
Tuberculosis of respiratory system	47.0	52.7	52.3	49.4	53.9
Syphilis, locomotor ataxia, and general paralysis of the insane	11.5	12.3	11.1	12.2	11.3
Cancer (all forms)	91.0	90.1	91.2	91.0	94.8
Diabetes mellitus	25.2	26.8	23.6	27.3	26.9
Cerebral hemorrhage; apoplexy	67.7	64.7	63.8	68.3	66.5
Diseases of the heart†	162.3	176.8	165.6	177.0	176.6
Diseases of the coronary arteries	25.2	27.3	22.0	26.9	23.3
Angina pectoris	7.7	9.4	9.3	9.4	11.0
Pneumonia (all forms)	88.3	97.6	87.5	103.7	96.9
Diarrhea and enteritis	5.7	5.2	6.8	6.1	6.1
Appendicitis	10.1	12.0	11.9	10.2	11.5
Chronic nephritis (Bright's disease)	61.7	60.4	62.7	64.7	65.3
Puerperal state—total	7.9	7.7	7.9	7.8	9.3
Suicides	9.4	8.9	10.2	8.7	8.8
Homicides	4.2	4.7	5.1	4.4	5.5
Accidents—total	48.3	49.5	51.3	49.8	51.7
Automobile accidents	15.9	16.4	19.9	15.9	18.4
All other diseases and conditions	175.8	175.5	170.1	169.7	157.9

*The rates for 1936 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes pericarditis, acute endocarditis, and acute myocarditis.

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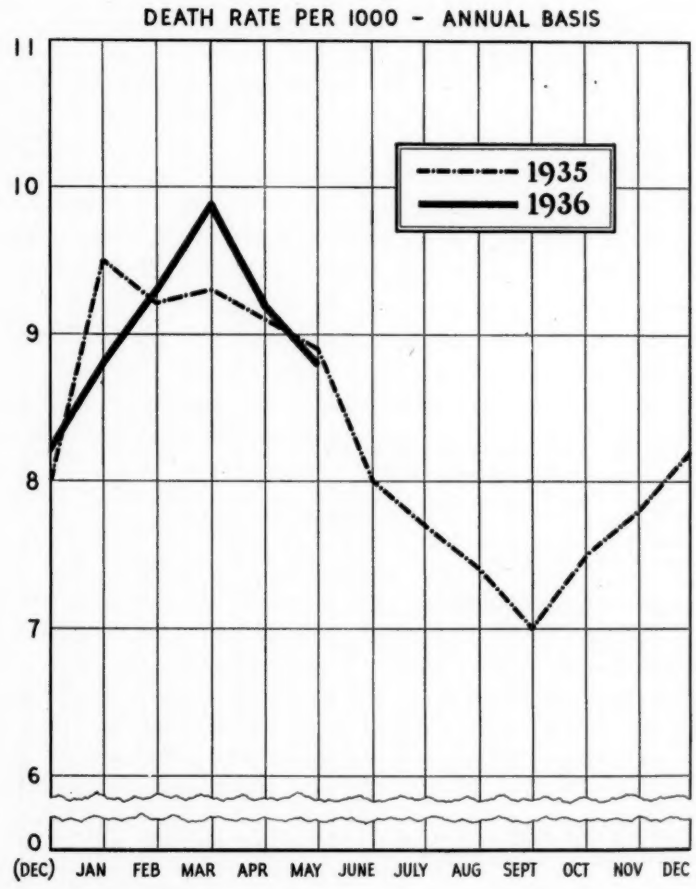
DEATH RATES FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO. – INDUSTRIAL DEP'T.
WEEKLY PREMIUM-PAYING BUSINESS – TOTAL PERSONS



1935	9.5	9.2	9.3	9.1	8.9	8.0	7.7	7.4	7.0	7.5	7.8	8.2
1936	8.8	9.3	9.9	9.2	8.8							

Rates are provisional for 1936

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